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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/765,202	01/28/2004	James P. Dunyak	58010-00602	7630

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EXAMINER

ODOM, CURTIS B

ART UNIT PAPER NUMBER

2634

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/765,202	Applicant(s) DUNYAK ET AL.	
	Examiner Curtis B. Odom	Art Unit 2634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-88 is/are pending in the application.
- 4a) Of the above claim(s) 1-56 and 77-88 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 57-76 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 57-62, 64-72 and 74-76 are rejected under 35 U.S.C. 102(e) as being anticipated by Bottomley (U. S. Patent No. 6, 442, 154).

Regarding claim 57, Bottomley discloses method for canceling multiple user interference in a communications system wherein a plurality of users communicate over a shared channel, the method comprising:

receiving (Figs. 7 and 9, block 92, column 5, lines 27-38 and column 6, lines 61-67) a set of data that provides a plurality of discrete values produced at a sub-symbol (chip) interval that is less than a full symbol period; and

estimating (Figs. 7 and 9, blocks 94, 96, 98, and 100, column 3, lines 39-57, column 5, line 63-column 6, line 31, column 6, line 61-column 7, line 20, column 7, line 56-column 8, line 12, wherein estimating includes correlation and detection) bits for a symbol corresponding to a given user by interpolating the signature (spreading) waveforms (column 5, line 63-column 6, line 61 and column 10, lines 7-8) for at least some of the plurality of users to a common

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sampling lattice (column 5, line 63-column 6, line 31) of the received set of data, wherein the signature (spreading) waveform is interpolated to common sampling times (lattice) of the received data.

Regarding claim 58, which inherits the limitations of claim 57, Bottomley discloses the communications system is a code division multiplex access communications system (Abstract).

Regarding claim 59, which inherits the limitations of claim 57, Bottomley discloses the communications system is an asynchronous code division multiplex access communications system (column 3, lines 39-57).

Regarding claim 60, which inherits the limitations of claim 57, Bottomley discloses the sub-symbol interval is a chip interval (column 3, lines 39-57 and column 5, lines 27-39).

Regarding claim 61, which inherits the limitations of claim 57, Bottomley discloses using the interpolated signature waveforms to determine an interference contribution (User A) corresponding to the given user (column 5, line 63-column 6, line 31).

Regarding claim 62, which inherits the limitations of claim 61, Bottomley discloses the interpolated signature waveform is used to perform signal reconstruction for a first sub-symbol interval and is retained to estimate bits in a second sub-symbol interval that follows the first sub-symbol interval (column 6, lines 32-61), wherein the same waveform can be used for the entire symbol period (column 6, lines 57-60).

Regarding claim 64, which inherits the limitations of claim 57, Bottomley discloses a plurality of decoupled multi-user detection processing elements respectively determine the interference contributions for each of the plurality of users at the sub-symbol interval (column 6, line 61-column 7, line 32), wherein codes of the strongest users (interference contributors) can be

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correlated separately to produce a code which is used to cancel the interference from the signal of interest (column 7, lines 25-32).

Regarding claim 65, which inherits the limitations of claim 64, Bottomley discloses

determining (column 7, lines 25-32) a current interference estimate for a current sub-symbol interval by combining the determined interference contributions for each of the plurality of users;

removing (column 7, lines 47-55 and column 8, lines 18-37, subtraction) the current interference estimate from the set of data to provide an innovation signal (updated buffer signal); and

using (column 8, lines 38-45) the innovation signal to estimate bits for the given user in the current sub-symbol interval and determine a next interference estimate for each of the plurality of users corresponding to the next sub-symbol interval.

Regarding claim 66, which inherits the limitations of claim 57, Bottomley discloses the symbol is a multiple-bit symbol (column 5, line 63-column 6, line 31).

Regarding claims 67-72, 74-76, the claimed apparatus includes features corresponding to the above rejection of claims 57-62, 64-66 which is applicable hereto.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 63 and 73 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bottomley (U. S. Patent No. 6, 442, 154).

Regarding claims 63 and 73, Bottomley does not disclose a sub-symbol delay accommodates concurrently retaining the interpolated signature waveform for bit estimation in the second sub-symbol interval and for signal reconstruction for the first sub-symbol interval. However, Bottomley does disclose that if the same spreading (signature) waveform is used for each symbol period, then the waveform can be stored and used for subsequent symbol period (column 6, lines 57-60). Therefore, it would have been obvious to one skilled in the art at the time the invention was made that the waveform could have been delayed (stored) for concurrent bit estimation in the second sub-symbol interval and signal reconstruction for the first sub-symbol interval. Thus, claims 63 and 73 do not constitute patentability.

Conclusion

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 571-272-3046. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 571-272-3056. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Curtis Odom
September 9, 2005



STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
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